

REMARKS

I. THE NEW CLAIMS

The new independent fire protection system claim 18 emphasizes the features that produce the curtain-like water spray haze 7 that is directly in front of the fire protection glass pane. These features were found, in part, in the original dependent claims 6 and 9.

More specifically, the first paragraph of claim 18 following the transitional and title wording is the same as the first paragraph of the original claim 1.

The second paragraph of claim 18 differs from that of the original claim 1 in which the outlet nozzles are limited to high-pressure water-spray nozzles for atomizing water. The last paragraph on page 6 of the applicants' specification supports these additional limitations in the second paragraph of independent claim 18. Also see page 3, lines 2 and 28, of the applicants' specification.

The third paragraph of claim 18 includes the limitations that the outlet nozzles are arranged on a ceiling and in front of and spaced from the fire protection glass pane. This embodiment is shown in figs. 1 and 3 and is described in applicants' specification on page 6, especially lines 14 to 17.

The fourth paragraph of claim 18 includes the limitations that the water spray haze extends from the ceiling to the bottom end of the glass pane and has a width from 10 cm to 200 cm. This latter limitation is found in the originally filed

dependent claim 6. Fig. 4 of the applicants' specification shows the spray haze extends from the ceiling to the bottom end of the glass pane.

Claim 18 covers embodiments in which the water spray haze is produced in the space being protected on the side of the glass pane opposite from the fire, in the other space on the side of the glass pane on which the fire develops and on both sides of the glass pane, as explained in the second paragraph on page 8 of the originally filed US specification.

Dependent claims 19 to 21 contain the subject matter of canceled claims 7 to 9 respectively.

Dependent claim 22 contains the subject matter of canceled claims 10 to 14 expressed alternatively.

Dependent claims 23 and 24 contain subject matter from canceled claims 5 and 6 respectively.

Dependent claims 25 and 26 contain subject matter from canceled claims 15 and 16 respectively.

II. CLAIM OBJECTION

Claim 1 was objected to because terms lacked proper antecedent basis.

Claim 18 has been drafted to avoid using the objected-to wording.

Accordingly the objection to the wording of claim 1 has been obviated in view of its cancellation and the absence of the objected-to wording in the new claims.

III. OBVIOUSNESS REJECTION

Claims 1 to 17 were rejected as obvious under 35 U.S.C. 103 (a) over Sundholm, US Patent 6,779,309.

New claims 18 to 26 replace canceled claims 1 to 17. The new independent claim 18 includes additional limitations to further distinguish its subject matter from the disclosures of Sundholm.

A. The Content of Sundholm

Sundholm discloses a hydraulically-operated fire door with an actuator 3, 3' for opening and closing the door by hydraulic means (claim 1), which also supplies aqueous liquid to the interior 15 of the fire door to cool it (see claim 16). Dependent claim 15 of Sundholm limits the fire door to a door that is made of glass.

Claim 11 of Sundholm covers embodiments, which also include a fire extinguishing system comprising spray heads 10, 10' (shown in figs. 1 and 3; see column 1, lines 30 to 40, and column 2, lines 28 to 34). The fire extinguishing system also includes a thermal trigger 12 (claim 14, column 3, lines 18 to 24),

which may be embodied as a glass ampoule that explodes at high temperature.

The fire protection system comprises the hydraulic fire door or doors and the fire extinguishing system that includes a sprinkler system with spray heads 10, 10'.

Sondholm teaches that great savings can be obtained when the same water line supplies both the hydraulic door actuator and the spray heads 10, 10', but that arrangement is clearly optional. Sondholm includes embodiments in which the spray heads are supplied separately from the actuator for the hydraulic door.

B. Differences between Claim 18 and Sundholm

Sundholm does **not** disclose the limitation in claim 18 that the fire protection glass pane is of fire-risk category E. Instead Sundholm teaches that their invention only requires an inexpensive fire door that can be made of a material whose fire resistance is not especially good at column 1, lines 45 to 52. Glass panes of fire-risk category E are particularly expensive.

Sundholm does not disclose the limitations in claim 18 that their system produces a water spray haze as an additional light-permeable fire protection barrier directly in front of the fire protection glass pane and spaced from it.

Sundholm does not disclose the limitation that the width of the water spray haze 7 is from 10 to 200 cm. Also in order to be a fire protection barrier the water spray haze according to claim 18 must cover the entire glass pane from its top portion

at the ceiling to its bottom portion at the floor. Furthermore the droplets must be fine enough and distributed such that an observer can look through the haze although it provides a heat barrier.

More specifically, Sundholm does not disclose the location of the spray heads 10, 10' of the fire extinguishing system in relation to the fire door or any window panes in the fire door. Thus Sundolm does not limit the location and size of the spray produced by the spray heads 10, 10' in relation to the window pane or door, but those limitations are critical requirements to obtain the benefits of the applicants' claimed fire protection system for protecting the inner space of the building during a fire.

Furthermore the fire extinguishing system of Sundolm is clearly a sprinkler system and the spray heads 10, 10' are sprinklers (column 4, lines 63 to 64). The system of Sundolm for extinguishing the fire thus falls into the category of system described on page 3, lines 21 to 28, of the applicants' originally filed specification. Sprinklers typically do not produce a water spray comprising water droplets, but instead dump large volumes of water on a fire. In contrast, applicants, water spray comprises a plurality of water droplets that are sufficiently fine to see through as required by claim 18.

The Office Action on page 2 alleges that the water spray openings 7 in the fire door "produce a curtain-like water spray haze in front of the glass pane which wets the glass pane". It is respectfully submitted that this contention misinterprets the disclosures of Sundolm in columns 3 to 5.

Sundholm states that water is conducted through passages 60, 61 within the door frame (column 3, line 53), so that it is supplied to spray openings 7 of the door (column 4, lines 22 to 27). Sundholm does state that the water sprays through the openings 7 onto the glass surfaces 14a, 14b, but does not state that a spray is formed in front of the fire door and spaced from the fire door.

Furthermore Sundolhm does not state that the spray is formed outside of the interior 15 of the door. Instead Sundhom teaches that the water spray impacts the interior glass surfaces 14a, 14b of the door itself to cool the door (so that a material that tolerates heat poorly can be used as the door) at column 4, lines 24 to 26 (see fig 2 the apparent position of the outlets in fig 1 on the outer surface of the door conflicts with the written disclosure in column 4 which states that the sprayed water fills the interior space 15 between the glass surfaces 14a, 14b).

The lower openings or ports 16 of Sundholm's door are not even spray outlets, but only outlets for water that is supplied to the door interior 15 to cool the door during operation in the presence of a fire. Note that column 4, lines 29 to 31, clearly state that the spray of water into the door interior takes place at a fast rate than the outflow of water from the outlets 16 so that water fills the interior 15 of the door.

Thus the spray outlets 7 of Sundholm could not produce a water spray haze that is spaced from their door and has a width in a perpendicular direction from the fire protection glass pane of at least 10 cm (25.4 inches), since a fire door would not be 2 feet or more in thickness. Furthermore a sprinkler system

will not operate to produce a water spray haze from the ceiling to the bottom of the door as claimed in claim 18.

C. The Rationale for the 103 Rejection

The reason for the rejection of the independent claim on page 2 of the Office Action is that it would be obvious to replace the soda lime glass in the door of Sundholm with a glass pane with a fire-risk category E.

However this reasoning cannot be applied to the new claim 18 because of the additional limitations in claim 18.

The following additional limitations in claim 18 are neither disclosed nor suggested by Sundholm:

- (1) the water spray system of claim 18 has high-pressure water spray outlet nozzles for atomizing water, and thus producing a spray comprising fine water droplets, which distinguishes it from the conventional sprinkler system disclosed by Sundholm;
- (2) the water spray haze 7 extends from the ceiling to the bottom end of the glass pane and is spaced from it; and
- (3) the water spray haze 7 has a width in a perpendicular direction from the glass pane that is from 10 to 200 cm.

According to MPEP 2143 the TSM test for obviousness has not been abolished by the recent KSR Supreme Court decision. It should be clear that

Sunholm does not disclose or suggest or motivate one skilled in the art to produce the applicants' water spray curtain comprising fine droplets as limited by the above limitations 1 to 3 regarding size and position of the water spray curtain or haze. Thus it is respectfully submitted that one skilled in the art would not find the subject matter of claim 18 obvious from Sundholm under the more traditional TSM test for obviousness.

Regarding the newer more stringent tests for obviousness under KSR there is a common theme regarding predictability. The essence of many of these tests is that an invention is obvious if the results achieved by the inventor were clearly predictable from the prior art. According to page 3 of the applicants' originally filed specification that applicant has achieved surprising results because those skilled in the art would expect that you could not form a water haze immediately adjacent to a window pane when a fire was on the other side of the window pane because the water droplets of the haze would contact the window pane which experiences a strong temperature gradient and the window pane would break those exposing the space to be protected to the fire. Applicants have surprisingly found that when a fire protection glass pane of fire-risk category E is used to seal off the space and the glass pane comprises monolithic glass panels, the glass pane does not break when the protective water spray haze is formed (see page 3 of the applicants' specification).

Accordingly because of the additional limitations in independent claim 18 , it is respectfully submitted that new claims 18 to 22 should not be rejected as

obvious under 35 U.S.C. 103 (a) over Sundholm, US Patent 6,779,309 for the aforesaid reasons.

Should the Examiner require or consider it advisable that the specification, claims and/or drawing be further amended or corrected in formal respects to put this case in condition for final allowance, then it is requested that such amendments or corrections be carried out by Examiner's Amendment and the case passed to issue. Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing the case to allowance, he or she is invited to telephone the undersigned at 1-631-549-4700.

In view of the foregoing, favorable allowance is respectfully solicited.

Respectfully submitted,



Michael J. Striker,
Attorney for the Applicants
Reg. No. 27,233